Amendments to the Claims

1. (Currently amended) A one-piece anastomosis device for connecting a graft vessel to a target vessel, comprising:

a device body formed of a superelastic or pseudoelastic material, the body having an insertion configuration and a tissue holding configuration in which the body has an inner flange and an outer flange, the outer flange having a plurality of outer flange members and the inner flange having a plurality of inner flange members, wherein at least one of the outer flange members is substantially radially offset from at least one of the inner flange members in the tissue holding configuration; and wherein at least a portion of the body between the inner flange and the outer flange maintains a substantially constant diameter in both the insertion configuration and the tissue holding configuration.

2. (Previously presented) The device of Claim 1, wherein a portion of the device body between the inner flange and the outer flange is expandable from a first diameter in the insertion configuration to a second diameter in the tissue holding configuration.

3. (Original) The device of Claim 1, wherein the superelastic or pseudoelastic material is a nickel titanium alloy.

4. (Previously presented) The device of Claim 1, wherein at least one of the inner flange elements is configured to penetrate and hold a graft vessel in place on the device body.

5. (Cancelled)

6. (Cancelled)

7. (Original) The device of Claim 1, wherein the device body uses the superelastic or pseudoelastic properties of the material to self deform from the insertion configuration to the tissue holding configuration.

8. (Currently amended) A tube deployed anastomosis system for connecting a graft vessel to a target vessel, comprising:

a deployment tube; and

an anastomosis device formed of a superelastic or pseudoelastic material, the device having an insertion configuration and a tissue holding configuration in which the device has an inner flange and an outer flange, the outer flange having a plurality of outer flange members and the inner flange having a plurality of inner flange members, wherein at least one of the outer flange members is substantially radially offset from at least one of the inner flange members in the tissue holding configuration, and wherein at least a portion of the body between the inner flange and the outer flange maintains a substantially constant diameter in both the insertion configuration and the tissue holding configuration;

wherein at least one of the inner and outer flanges is radially constrained in the deployment tube in the insertion configuration for insertion into the target vessel and when released from the deployment tube self deforms to the tissue holding configuration.

9. (Previously presented) The device of Claim 8, wherein a portion of the device body between the inner flange and the outer flange is expandable from a first diameter in the insertion configuration to a second diameter in the tissue holding configuration.

10. (Original) The device of Claim 8, wherein the superelastic or pseudoelastic material is a nickel titanium alloy.

11. (Original) The device of Claim 8, further comprising a plurality of tissue penetrating elements for penetrating and holding a graft vessel in place on the device body.

12. (Original) The device of Claim 11, wherein the tissue penetrating elements extend radially outwardly from the device body for holding an everted end of the graft vessel.

13. (Original) The device of Claim 8, wherein the device body uses the superelastic or pseudoelastic properties of the material to self deform from the insertion configuration to the tissue holding configuration.

14. (Currently amended) A method of deploying an anastomosis system for connecting a graft vessel to a target vessel, the method comprising:

providing an anastomosis device deployable to form an inner flange having a plurality of inner flange members and an outer flange having a plurality of outer flange members;

penetrating and holding the graft vessel with at least one of the inner flange members; and

~~connecting a graft vessel to a one piece device formed of a superelastic or pseudoelastic material;~~

~~poking a portion of the one piece device through the graft vessel; and~~

deploying the one piece device by self deformation to a tissue holding configuration in which the device has an inner flange and an outer flange and traps the target vessel tissue between the inner flange and the outer flange, ~~the outer flange having a plurality of outer flange members and the inner flange having a plurality of inner flange members,~~ wherein at least one of the outer flange members is substantially radially offset from at least one of the inner flange members, and wherein at least a portion of the device between the inner flange and the outer flange maintains a substantially constant diameter before and after the deploying.

15. (Original) The method of Claim 14, wherein the one piece device is deployed by removing a radially constraining deployment tool from the device.

16. (Original) The method of Claim 15, wherein the deployment tool is a deployment tube which receives the tubular device, and wherein the deployment tube is inserted partially into the target vessel wall and then withdrawn to deploy the one piece device from the deployment tube.

17. (Previously presented) The method of Claim 14, wherein the one-piece device is deployed by employing the superelastic or pseudoelastic property of a material from which the one-piece device is formed.

18. (Original) The method of Claim 14, wherein the graft vessel is everted around the one piece device.

19. (Original) The method of claim 14, wherein the deployed one piece device abuts an intima of the graft vessel against an intima of the target vessel.

20. (Previously presented) The device of claim 1, wherein at least one of the inner flange members is a hook.

21. (Previously presented) The device of claim 1, wherein the outer flange members are configured to contact the outer wall of the target vessel without penetrating it.

22. (Previously presented) The device of claim 1, wherein at least one of the inner and outer flanges is radially constrained in the insertion configuration for insertion into the target vessel and when released self deforms to the tissue holding configuration.

23. (Currently amended) A one-piece anastomosis device for connecting a graft vessel to a target vessel, comprising:

a device body formed of a shape memory material, the body having an insertion configuration and a tissue holding configuration in which the body has an inner flange and an outer flange, the outer flange having a plurality of outer flange members and the inner flange having a plurality of inner flange members, ~~wherein at least one of the outer flange members is substantially radially offset from at least one of the inner flange members in the tissue holding configuration~~; wherein at least one of the two sets of flange members does not

penetrate tissue; and wherein at least a portion of the body between the inner flange and the outer flange maintains a substantially constant diameter in both the insertion configuration and the tissue holding configuration.

24. (New) The one-piece anastomosis device of claim 23, wherein at least one of the two sets of flange members has blunt ends.

25. (New) The one-piece anastomosis device of claim 23, wherein the outer flange members do not penetrate tissue.

26. (New) The one-piece anastomosis device of claim 23, wherein at least a portion of the body is an uninterrupted ring.